

# INDEX OF SHEETS

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CITY OF MEMPHIS

DIVISION OF ENGINEERING

## ARRA WINCHESTER TUNNEL

FEDERAL AID PROJECT NO. ARRA-STP-M-2813(9)

STATE P.E. NO. 79LPLM-F0-191

STATE CONST. PROJECT NO. 79LPLM-F3-195

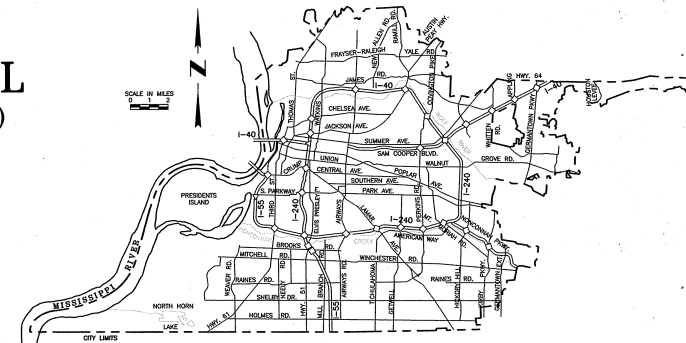
CITY PROJECT NUMBER

TDOT PIN 112836.00/CITY PROJECT PW02030

DATE OF BIDS  
JUNE 4, 2010

LOCALLY MANAGED PROJECT

## WINCHESTER TUNNEL JOINT REPAIR



### LEGEND

#### PROFILE SYMBOLS

PROFILE SOUTH & EAST OF LINE  
PROFILE EXISTING GRADE LINE  
PROFILE NORTH & WEST OF LINE  
PROPOSED GRADE LINE

SEWER & DRAIN MANHOLE  
SEWER & DRAIN PIPE



#### EXISTING PLAN

EXISTING SYMBOLS

PROPOSED SYMBOLS

RIGHT OF WAY LINE

CURB & GUTTER, NO. 6-72 INLET

NO. 11 INLET

CULVERT

DRAIN PIPE

SEWER PIPE

DRAIN MANHOLE

SEWER MANHOLE

ELECTRICAL MANHOLE

TELEPHONE MANHOLE

WATER METER

GAS OR WATER VALVE

POWER POLE

TELEPHONE OR TELEGRAPH POLE

LIGHT POLE

FIRE HYDRANT

GUY WIRE

TOP OF CUT

TOE OF FILL

UNDERGROUND ELECTRICAL

UNDERGROUND WATER

UNDERGROUND TELEPHONE

UNDERGROUND GAS

HEDGE

SHRUB

TREE

FENCE LINE

EXISTING SYMBOLS

PROPOSED SYMBOLS

TO 21" DIA.

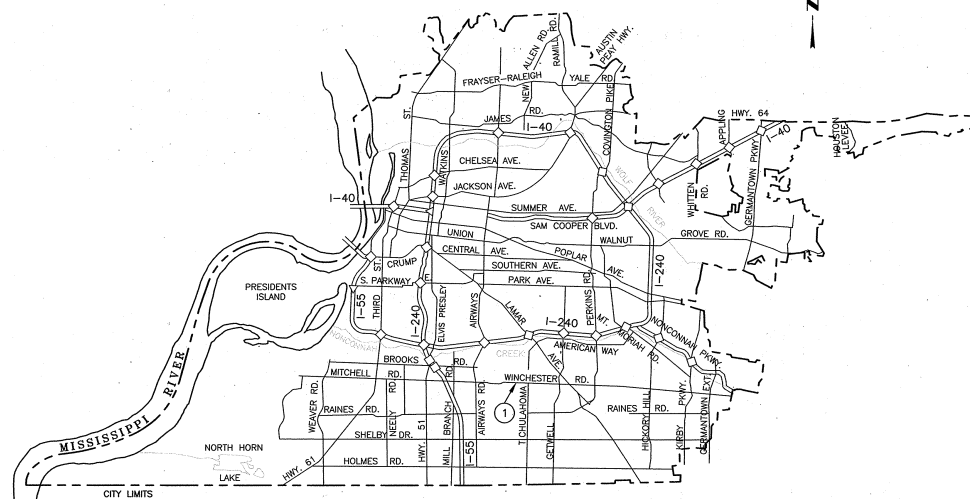
TO 24" & OVER

TO 21" DIA.

TO 24" & OVER

TO 21" DIA.

TO 24" & OVER



LOCATION PLAN

N.T.S.

THERE IS A NON-REFUNDABLE CHARGE OF (\$80.00) EIGHTY DOLLARS FOR THIS SET OF PLANS AND RELATED SPECIFICATIONS.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE DIVISION OF ENGINEERING, CITY OF MEMPHIS, AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

FOR UTILITIES: CALL "TENN. ONE CALL SYSTEMS INC.", 1-800-351-1111 72 HOURS BEFORE DIGGING.

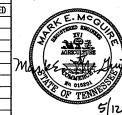
NOTES:

1. THIS PROJECT IS TO BE CONSTRUCTED UNDER THE TENNESSEE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MARCH 1, 2006 EDITION AS REVISED AND ADDITIONAL SPECIFICATIONS AND PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES IN THE CONSTRUCTION ZONE. UTILITY LOCATIONS SHOWN ON THE PLANS ARE FOR INFORMATION ONLY. FOR UTILITY LOCATIONS CONTACT "TENNESSEE ONE CALL SYSTEM, INC.", 1-800-351-1111 A MINIMUM OF 72 HOURS BEFORE DIGGING.
3. ITEM NO. 604-10.44, "EXPANSION JOINT REPAIR" SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. THIS PRICE WILL BE THE FULL COMPENSATION FOR FURNISHING ALL MATERIALS AND LABOR REQUIRED TO SEAL JOINTS AS DETAILED IN THE PLANS. JOINT LOCATIONS TO BE SEALED ARE AS SHOWN ON THE REFERENCE PLANS (A TOTAL OF 11 JOINTS TO BE SEALED; EACH JOINT IS APPROXIMATELY 130' LONG) OR AS DESIGNATED BY THE ENGINEER. THE SEALING MATERIAL IS TO BE A SOLVENT FREE, HYDROPHILIC, LIQUID POLYURETHANE INJECTION RESIN DESIGNED TO SEAL LEAKS IN CONCRETE AND MASONRY STRUCTURES. THE CONTRACTOR WILL PREPARE A PLAN OF ACTION FOR THE CITY OF MEMPHIS DIVISION OF ENGINEERING TO REVIEW AND APPROVE FOR THE INSTALLATION OF THE SEALANT. THE CITY OF MEMPHIS' APPROVAL DOES NOT NEGATE ANY RESPONSIBILITY OF THE CONTRACTOR FOR THE WORK HE IS DOING. ALL LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADHERE TO THE APPLICABLE STATUTES AND REGULATIONS. MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION OF SEALANT.
4. ITEM NO. 712-01 [TDOT], "TRAFFIC CONTROL" SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LUMP SUM. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL FLAGGERS, TRAFFIC CONES AND REMOVING CONFLICTING AND INCORRECT PAVEMENT MARKINGS, AS REQUIRED, UNTIL PROJECT COMPLETION.
5. ITEM NO. 712-04.01 [TDOT], "FLEXIBLE DRUMS (CHANNELIZATION)" SHALL BE PAID AT THE CONTRACT UNIT PRICE PER EACH. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, INSTALLATION, MAINTENANCE AND ALL INCIDENTALS TO PLACE DRUMS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. ITEM NO. 712-05.01 [TDOT], "WARNING LIGHTS (TYPE A)" SHALL BE PAID THE CONTRACT UNIT PRICE PER EACH. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, INSTALLATION, MAINTENANCE AND ALL INCIDENTALS TO PLACE LIGHTS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
7. ITEM NO. 712-05.03 [TDOT], "WARNING LIGHTS (TYPE C)" SHALL BE PAID THE CONTRACT UNIT PRICE PER EACH. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, INSTALLATION, MAINTENANCE AND ALL INCIDENTALS TO PLACE LIGHTS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
8. ITEM NO. 712-06 [TDOT], "SIGNS (CONSTRUCTION)" SHALL BE PAID THE CONTRACT UNIT PRICE PER SQUARE FOOT. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, INSTALLATION, MAINTENANCE AND ALL INCIDENTALS TO PLACE THE SIGNS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
9. ITEM NO. 712-07.03 [TDOT], "TEMPORARY BARRICADES (TYPE III)" SHALL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, EQUIPMENT, INSTALLATION, RELOCATING, MAINTENANCE AND ALL INCIDENTALS TO PLACE THE BARRICADES AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
10. ITEM NO. 717-01 [TDOT], "MOBILIZATION" SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE. THIS PRICE WILL BE FULL COMPENSATION FOR FURNISHING BOND, INSURANCE, AND ALL MATERIALS, AND LABOR REQUIRED TO BEGIN THE WORK AS SHOWN ON THE PLANS.

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
604-10.44	JOINT REPAIR	L.F.	1,430
712-01	TRAFFIC CONTROL	L.S.	1
712-04.01	FLEXIBLE DRUMS (CHANNELIZATION)	EA.	350
712-05.03	WARNING LIGHTS (TYPE "C")	EA.	350
712-06	SIGNS (CONSTRUCTION)	S.F.	402
712-07.03	TEMPORARY BARRICADES (TYPE III)	S.F.	84
717-01	MOBILIZATION	L.S.	1

REVISIONS		
DATE	DESCRIPTIONS	APPROVED

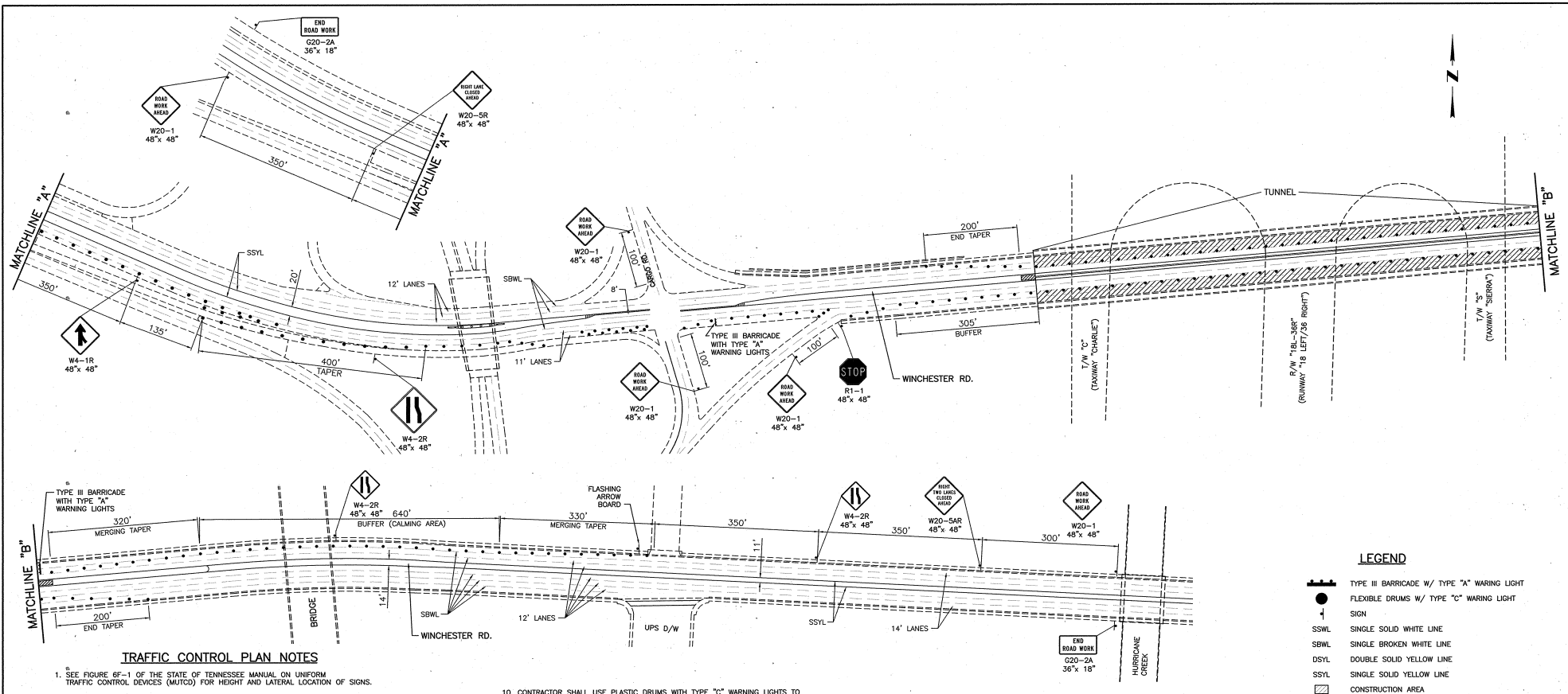


SHEET \_\_\_\_ OF \_\_\_\_  
DIVISION OF PUBLIC WORKS  
**WINCHESTER TUNNEL REPAIR**  
ESTIMATED QUANTITIES  
MEMPHIS, TENN.

SURVEY N/A DATE \_\_\_\_ BOOK N/A  
DRAFTED L.R.H. DATE 9/09 SCALE N.T.S.  
DESIGN M.E.M. DATE 9/09 CHECKED DATE  
APPROVED  
CITY CIVIL DESIGN ENGINEER DATE CITY ENGINEER DATE

5/12/10

PROJECT NO. PW02030



# TRAFFIC CONTROL PLAN NOTES

- SEE FIGURE 6F-1 OF THE STATE OF TENNESSEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR HEIGHT AND LATERAL LOCATION OF SIGNS.
- SIGNS SHOWN ON THIS PLAN ARE TO WARN TRAFFIC ABOUT THE CONSTRUCTION. OTHER TRAFFIC CONTROL DEVICES MAY BE REQUIRED DURING VARIOUS PHASES OF CONSTRUCTION.
- NOTHING IN THIS PLAN IS INTENDED TO SUPERSEDE OR RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF INSTALLING THE APPROPRIATE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE CURRENT STATE OF TENNESSEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
- CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE CITY OF MEMPHIS CONSTRUCTION INSPECTION DEPARTMENT (636-2462) AND TRAFFIC ENGINEERING DEPARTMENT (576-6710) A MINIMUM OF 24 HOURS PRIOR TO COMMENCING CONSTRUCTION OR IMPLEMENTING A TRAFFIC CONTROL PLAN. ALL TRAFFIC CONTROL DEVICES MUST BE IN PLACE BEFORE CONSTRUCTION ACTIVITY BEGINS.
- SIZES OF ALL SIGNS SHALL COMPLY WITH STATE OF TENNESSEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- ALL TRAFFIC CONTROL DEVICES AND THEIR INSTALLATION SHALL MEET THE STANDARD PRESCRIBED IN THE STATE OF TENNESSEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND SHALL COMPLY WITH THE STATE OF TENNESSEE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 712 TEMPORARY TRAFFIC CONTROL.
- ACCESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
- SIDE STREET, DRIVEWAY ACCESS, AND SAFE PEDESTRIAN WAYS SHALL BE MAINTAINED AT ALL TIMES.
- THE CONTRACTOR SHALL NOT BE PERMITTED TO PARK ANY VEHICLES OR CONSTRUCTION EQUIPMENT DURING PERIODS OF INACTIVITY, WITHIN THIRTY (30) FEET OF THE EDGE OF PAVEMENT WHEN THE LANE IS OPEN TO TRAFFIC, UNLESS PROTECTED BY GUARDRAIL, BRIDGE RAIL, AND/OR BARRIERS INSTALLED FOR OTHER PURPOSES. PRIVATELY OWNED VEHICLES SHALL NOT BE ALLOWED TO BE PARKED WITHIN THIRTY (30) FEET OF AN OPEN TRAFFIC LANE AT ANY TIME UNLESS PROTECTED AS DESCRIBED ABOVE. WHERE THERE IS INSUFFICIENT RIGHT-OF-WAY TO PROVIDE FOR THIS THIRTY (30) FEET SETBACK, THE CONTRACTOR SHALL DETERMINE THE ALTERNATE LOCATIONS AND REQUEST THE ENGINEER'S APPROVAL TO USE THEM.
- CONTRACTOR SHALL USE PLASTIC DRUMS WITH TYPE "C" WARNING LIGHTS TO SEPARATE TRAFFIC FROM THE CONSTRUCTION AREA.
- CONTRACTOR SHALL COVER ALL EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL PLAN SIGNS OR DEVICES DURING CONSTRUCTION AND THEY SHALL REMAIN COVERED DURING CONSTRUCTION AND UNTIL SUCH TIME THAT NO CONFLICT EXISTS.
- ONLY ONE PHASE OF THE TRAFFIC CONTROL PLAN SHALL BE ACTIVE AT ANY ONE TIME.
- ALL TEMPORARY OR PERMANENT TRAVELED SURFACES SHALL BE INSPECTED DAILY BY THE CONTRACTOR (INCLUDING WEEKENDS) AND NECESSARY PATCHING OR REFINISHING PERFORMED.
- MARKINGS SHALL BE MAINTAINED IN LONG-TERM STATIONARY WORK AREAS AND SHALL MATCH AND MEET THE MARKINGS IN PLACE AT BOTH ENDS OF THE WORK AREA.
- CENTERLINE/LANE LINES SHOULD BE PLACED, REPLACED, OR DELINEATED WHERE APPROPRIATE BEFORE THE ROADWAY IS OPENED TO TRAFFIC.
- THE APPROPRIATE TRAFFIC CONTROL SHALL BE INSTALLED AT THE INCEPTION OF EACH STAGE OF CONSTRUCTION AND SHALL BE PROPERLY MAINTAINED AND/OR OPERATED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER.
- WORK WITHIN THE ROADWAY SHALL BE CONDUCTED BETWEEN 9:00 A.M. AND 4:00 P.M. AND THE ROADWAY SHALL BE COMPLETELY OPEN TO TRAFFIC AT ALL OTHER TIMES AND ALL INAPPROPRIATE SIGNS SHALL BE COVERED OR REMOVED.
- EXISTING STRIPING THAT CONFLICTS WITH THE TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING CONSTRUCTION. WHEN CONSTRUCTION IS COMPLETE THE EXISTING STRIPING SHALL BE RETURNED TO ITS ORIGINAL STATE.
- ALL TRAFFIC CONTROL SIGNS SHALL MEET THE MINIMUM RETROREFLECTIVITY LEVELS SPECIFIED IN THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

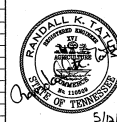
## LEGEND

- TYPE III BARRICADE W/ TYPE "A" WARNING LIGHT
- FLEXIBLE DRUMS W/ TYPE "C" WARNING LIGHT
- SIGN
- SSWL SINGLE SOLID WHITE LINE
- SBWL SINGLE BROKEN WHITE LINE
- DSYL DOUBLE SOLID YELLOW LINE
- SSYL SINGLE SOLID YELLOW LINE
- CONSTRUCTION AREA

## PHASE I

DESIGN SPEED: 40 M.P.H.

REVIEWS		
DATE	DESCRIPTIONS	APPROVED



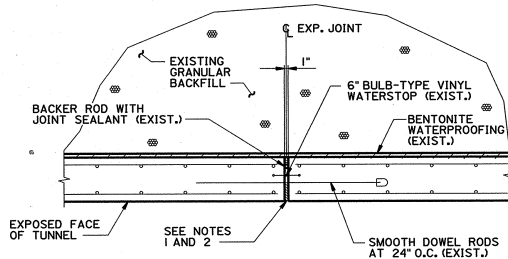
SHEET 1 OF 2  
DIVISION OF ENGINEERING

**WINCHESTER ROAD**  
REPAIRS TO TUNNEL UNDERWAY  
MEMPHIS, TENN.

DRAFTED J.R.H. DATE 9/09 SCALE N.T.S.  
DESIGN J.R.H. DATE 9/09 CHECKED DATE  
APPROVED  
CITY TRAFFIC ENGINEER DATE  
CITY ENGINEER

PROJECT NO. PW02030





**TYPICAL LONGITUDINAL JOINT DETAIL**

SCALE:  $\frac{3}{4}$ " = 1'-0"  
(SEE REFERENCE DWG. NO. M-346-122 AS SHOWN ON SHEET 7)

1. REMOVE EXISTING JOINT MATERIAL TO DOWEL RODS.
2. SEAL JOINT WITH A SOLVENT FREE, HYDROPHILIC, LIQUID POLYURETHANE INJECTION RESIN DESIGNED TO SEAL LEAKS IN CONCRETE AND MASONRY STRUCTURES. THE CONTRACTOR WILL PREPARE A PLAN OF ACTION FOR THE CITY OF MEMPHIS DIVISION OF ENGINEERING TO REVIEW AND APPROVE FOR THE INSTALLATION OF THE SEALANT. THE CITY OF MEMPHIS' APPROVAL DOES NOT NEGATE ANY RESPONSIBILITY OF THE CONTRACTOR FOR THE WORK HE IS DOING. ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADHERE TO THE APPLICABLE STATUTES AND REGULATIONS. MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION OF SEALANT. ALL WORK TO BE PERFORMED FROM UNDERSIDE OF TUNNEL.
3. A TOTAL OF 11 JOINTS ARE TO BE SEALED (SEE REFERENCE DWGS. M-346-116, 117, & 118 ON SHEET 6). JOINTS ARE APPROXIMATELY 130' LONG. THIS ITEM WILL BE BID ON THE CONTINGENCY THAT A JOINT MAY BE ELIMINATED AS DESIGNATED BY THE ENGINEER.

### INJECTION RESIN SPECIFICATIONS

THE SEALING MATERIAL IS TO BE A SOLVENT FREE, HYDROPHILIC, LIQUID POLYURETHANE INJECTION RESIN DESIGNED TO SEAL LEAKS IN CONCRETE AND MASONRY STRUCTURES. THE PRODUCT WHEN CONTACTED WITH WATER MUST EXPAND SEVERAL TIMES ITS INJECTED VOLUME AND FORM A TOUGH, FLEXIBLE FOAM SEAL THAT CANNOT BE PENETRATED BY WATER.

THE SEALING MATERIAL WILL HAVE THE FOLLOWING PHYSICAL PROPERTIES:

VISCOSITY	450 - 550 CPS
DENSITY	9.0 LBS PER GAL OF WATER EQUIVALENT VOLUME
SOLIDS %	100%
INDUCTION TIME	3 TO 4 MINUTES
CURE TIME	6 TO 7 MINUTES

AFTER CURING THE FOAM WILL HAVE THE FOLLOWING PROPERTIES REQUIREMENTS


TENSILE STRENGTH	(ASTM D-3574)	310 PSI
ELONGATION	(ASTM D-3574)	280%
SHRINKAGE	(ASTM D-1042/D-756)	LESS THAN 2%
INITIAL LINEAR SHRINKAGE	(ASTM D-3574)	5%
TEAR RESISTANCE	(ASTM D-3574)	20 LBS/IN
DENSITY	(ASTM D-3574)	494 KG/M3 (30.8 LBS/FT3)

THE CONTRACTOR WILL ALSO INCLUDE A MSDS SHEET ON THE PRODUCT AND FOLLOW ALL OSHA AND TOSHA SAFETY REQUIREMENTS. THE CONTRACTOR WILL PREPARE A PLAN OF ACTION FOR THE CITY OF MEMPHIS DIVISION OF ENGINEERING TO REVIEW AND APPROVE FOR THE INSTALLATION OF THE SEALANT. THE CITY OF MEMPHIS' APPROVAL DOES NOT NEGATE ANY RESPONSIBILITY OF THE CONTRACTOR FOR THE WORK HE IS DOING. ALL LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADHERE TO THE APPLICABLE STATUTES AND REGULATIONS.

**WARRANTY**  
THE CITY OF MEMPHIS REQUIRES A WARRANTY OF 1 YEAR (ONE YEAR) FOR THE PROJECT AND A 5 YEAR WARRANTY FOR THE MATERIAL TO MAINTAIN ITS INITIAL STRENGTH, TEAR RESISTANCE, AND IMPENETRABILITY BY WATER CHARACTERISTICS.

FILE NAME: M:\CIVIL\BRIDGE\TUNNELS\PROJECTS\WINCHES\TUNNEL\WINCHES\TUNNEL STANDARD LINE.DGN

REVISIONS		
DATE	DESCRIPTIONS	APPROVED



APPROVED: *[Signature]* 5/12/10

CITY CIVIL DESIGN DEPT. DATE CITY ENGINEER

SHEET 1 OF 1  
**JOINT REPAIR DETAILS**  
DIVISION OF ENGINEERING

**WINCHESTER ROAD**  
REPAIRS TO TUNNEL UNDER RUNWAY  
MEMPHIS, TENN.

SURVEY N/A	DATE N/A	BOOK N/A
DRAFTED MEM	DATE 11/08	SCALE AS NOTED
DESIGN MEM	DATE 11/08	CHECKED DATE 7/08

APPROVED: *[Signature]* 5/12/10

PROJECT NO. PW02030 (5)

